# MOSFET POWER AMPLIFIERS

**Installation Instructions / Owner's Manual**

## MDS GP800

**MDS - Multi Dynamic Systems of Sweden AB**
**Midsommarv. 8-10**
**126 35 Hägersten**
**+46(08)556 00 740**
**www.mds.se**

# *INTRODUCTION*

Congratulations on your purchase of a MDS state-of-the-art power amplifier. Your selection of a MDS product indicates a true appreciation of fine musical reproduction. Whether adding to an existing system or including your MDS amplifier in a new system, you are certain to notice immediate performance benefits.

# *KEEP YOUR SALES RECEIPT*

Take this time to attach your sales receipt to the manual and put in a safe place. In case of any unforeseen reason this product may need warranty service, your receipt will be necessary to establish purchase date.

# *RECOMMENDATION*

A power amplifier's performance is only as good as its installation. Proper installation will maximize the system's overall performance. It is recommended that you have our product installed by an authorized MDS retailer. However, if you decide to install it yourself, please carefully read through this manual and take your time to do a quality installation.

**IMPORTANT!** Before making any connections, disconnect the car's battery until the installation is completed to avoid possible damage to the electrical system.

## WARNING!

**Exposure to high power sound system can cause hearing loss or damage. Listening to your system at loud levels while driving, will impair your ability to hear traffic sounds and emergency vehicles. Use common sense when listening to your system.**

**Serial #** _____ **Model #** _____

# *SAFETY PRECAUTIONS*

### *Fuse amplifiers power wire at the battery.*

Be sure to fuse the power wire within 12" of the car's battery. This will protect the car's battery in case of a short circuit between the power amplifier and battery. THIS IS A MUST, the amplifier's built-in fuse will only protect the power amplifier not the car's battery!

### *Use high grade wire connectors.*

To ensure maximum power transfer and secure safe connections, it is recommended to use high grade barrier spades (for connection at amplifier) and terminal rings (for connection at battery).

### *Do not run any wires underneath vehicle*.

Exposed wires have a chance of being cut or damaged. It is best to run all wires through the vehicle under the carpet and/or side panels. This lends to a cleaner installation and less risk of damage.

### *Use caution when mounting amplifier.*

Remember there are many electrical wires, gas lines, vacuum lines, brake lines as well as a gas tank in the automobile. Make sure you know where they are when mounting the amplifier to avoid puncturing lines, shorting wires or drilling holes in the gas tank.

### *Run signal wires away from electrical wires.*

To avoid possibility of induced noise from the car's electrical system (i.e. popping noises or engine noise), run wires away from the car's electrical wiring.

### *Make all ground wires as short as possible and at the same point.*

In order to reduce the chance of ground loops (i.e. engine noise), make the grounding wire as short as possible to reduce the wire's resistance. Also, when using multiple components, make sure all units are grounded at the same point.

### *Avoid sharp edges when running the wires*.

To avoid the possibility of power, signal or speaker shorts, be careful not to allow the amplifiers wires to come in contact with sharp edges. Use a grommet to protect the wire when running through the fire wall .

# FEATURES AND BENEFITS

### *DC Offset Protection*

This circuit protects the output of the amplifier against DC voltage. If for some reason DC voltage is detected at the output stage, the amplifier will shut down protecting the speakers from direct current.

### *Short Circuit Protection*

The circuit protects the amplifier from damage due to a short found in the speakers or wiring. If one of the speakers or its wiring comes in contact with ground, the amplifier will shut down. To resume normal operation, correct the problem and turn the head unit off, then back on. The amplifier will reset and play again.

### *Thermal Protection*

To protect the amplifier circuitry against damage caused by prolonged exposure to high temperatures, a thermal protection circuit is activated if the amplifier reaches excessively high operating temperature. Once the thermal circuit is activated, the amplifier will shut down to cool off. The amplifier will automatically turn back on once it cools down to a safe operating temperature.

### *Power & Protection Indicator*

The power L.E.D. Illuminates when the amplifier is on and receiving power. The protect LED Illuminates when the amplifier has gone into the protection mode (Please refer to our trouble shooting section).

### *Built-in Crossover*

The MDS amplifier include a built-in combination variable high and low pass crossover. The low pass filter works together with the (subsonic) high pass filter to achieve band pass filtering. This concentrates the amplifier's output power to your subwoofer optimum frequency range .

### *Bass Boost*

For added low frequency performance the amplifiers are equipped with a variable 0~12 dB bass boost @ 45Hz.

### *Power Fusing*

This protects the amplifier against short circuits and excessive current.

### *Adjustable Input Sensitivity*

Allows you to fine-tune the level matching between your source and the power amplifier.

### *Remote Turn-on*

Automatically turns amplifier on when connected to the head unit's remote output. The amplifier will turn on and off with the head unit to save current consumption. This control also operates the reset circuit for the amplifier's protection. It must be connected with the head unit in order to reset protection circuits.

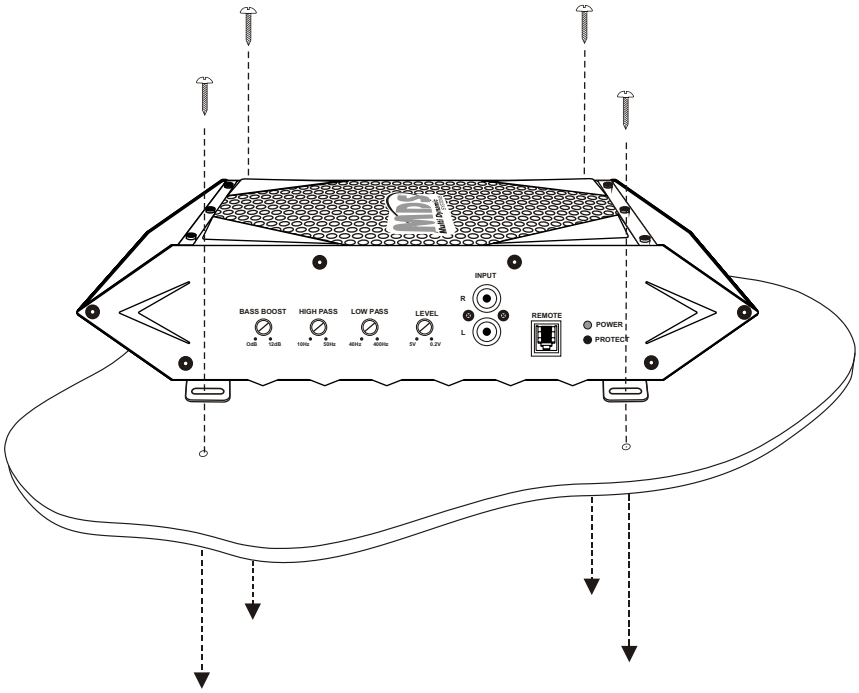
### *Stable To 2 Ohm*

Amplifier output impedance stable down to a 2 ohm load.

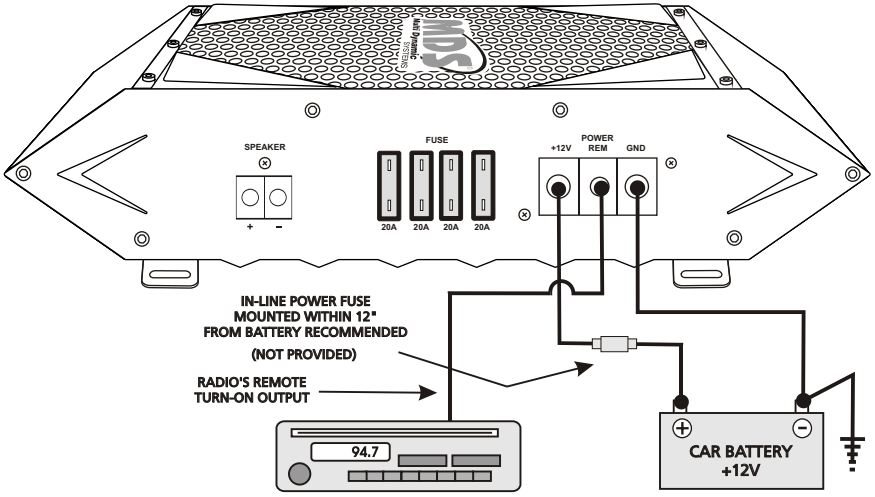
# *MOUNTING LOCATION*

Before you start the installation, it will be necessary to find a mounting location for the amplifier. Find a location in which the amplifier will receive adequate ventilation in order to dissipate the heat it develops during operation. Two popular mounting locations are in the trunk or under the seat.

Select the location in which you wish to mount the amplifier. Use caution when mounting amplifier, there are many wires, gas lines, vacuum lines, brake lines as well as a gas tank in the automobile. Make sure you know where they are when mounting the amplifier to avoid puncturing lines, shorting wires or drilling holes in the gas tank. Once you are ready, use a pencil to mark the mounting holes in the bottom panel. After you have marked the locations of the holes move amplifier out of the way and drill small starter holes to make the tapping screws easier to install. Use provided screws to tighten down the amplifier.



# POWER CONNECTIONS




**IMPORTANT!** Before making any connections, disconnect the car's battery until the installation is completed to avoid possible damage to the electrical system.

### *Connect the amplifier to the car's battery.*

At times, the amplifier will need to draw large levels of current that cannot be provided by any circuit in the car's fuse box. We recommend using a 4 to 8 gauge power wire for your connections depending on the length of the wire. Strip one end of the wire and connect to the terminal on the amplifier marked "+12V". Loosen screw terminal and insert bare wire and tighten. Use caution to make sure no stray wire stands come in contact with surrounding terminals causing short circuits. Run the wire directly to the positive terminal of the car's battery. Make sure to use an in-line fuse within 12" of the car's battery to protect the electrical system and amplifier against short circuits and/or power surges.

### *Connect the ground terminal of the amplifier to the car's chassis.*

For the ground connection, use an 4 to 8 gauge wire (black) to connect to the terminal marked GND and then connect it to the car's chassis. Try to keep the length of the cable as short as possible, preferably less than 6". Also make sure that the point on the car where the connection is to be made is free of paint and dirt.

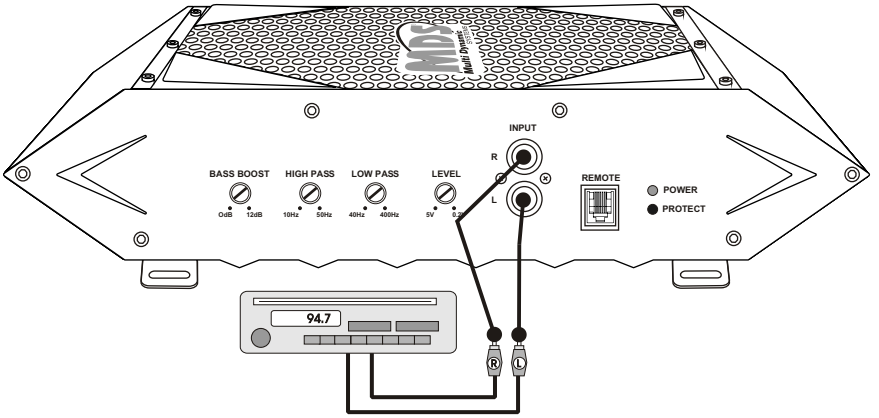
### *Connect the remote terminal of the amplifier to a switchable +12V source*.

This connection allows the amplifier to be turned on and off with the power control of the radio. If the radio has a REMOTE output terminal, connect it to the amplifier's terminal marked REMOTE (using a 16 gauge wire or heavier). Now when the radio is turned on, the amplifier will automatically turn on. This connection can also be made to the radio's Power Antenna wire.

# *SIGNAL CONNECTIONS*

***Connect the RCA output of the head unit (AM/FM cassette player, CD, or DAT) to the RCA input terminals of the amplifier.***

To make these connections, we recommend high quality RCA cables, which are available at your local car audio retailer. Run signal wires away from electrical wires to avoid possibility of induced noise from the car's electrical system (i.e. popping noises or engine noise). Please note that when making these connections the signal inputs correspond with the speaker outputs.



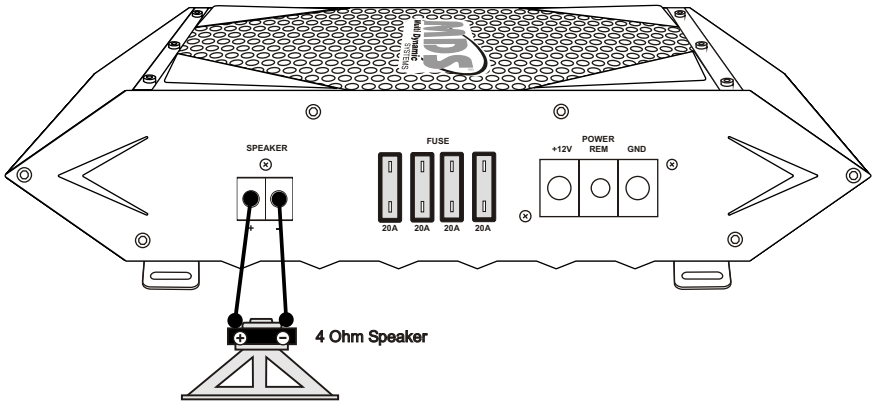

SIGNAL CONNECTIONS

# *SPEAKER CONNECTIONS*

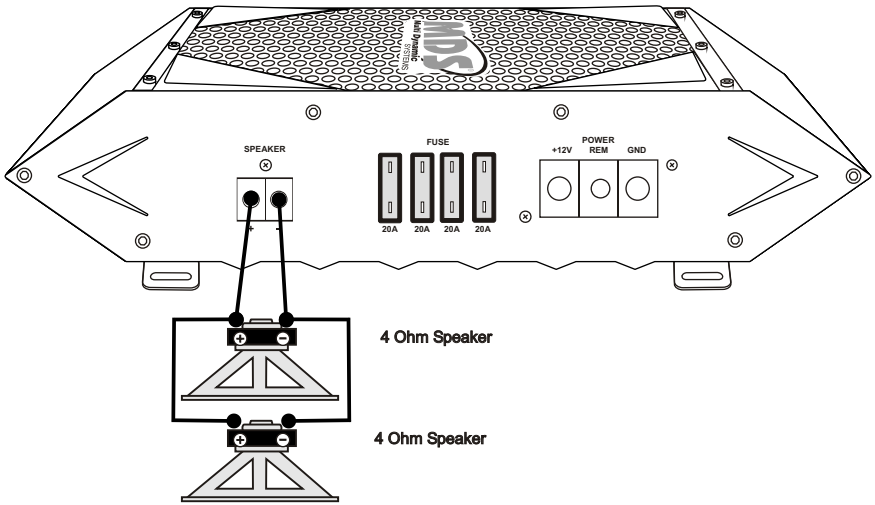
Make the speaker connections using speaker wire that is at least 16 gauge or heavier.

As with any audio component, proper phasing of the amplifier and speakers is essential for strong bass response. When connecting, make sure that positive (+) from the amplifier is connected to the positive (+) of the speaker, and the same for negative (-).

**CAUTION!** The amplifier must see a 2 Ohm load or higher. Any lower than 2 Ohms will cause the amplifier to overheat and possibly cause permanent damage to the amplifier!




SINGLE 4 OHM SPEAKER

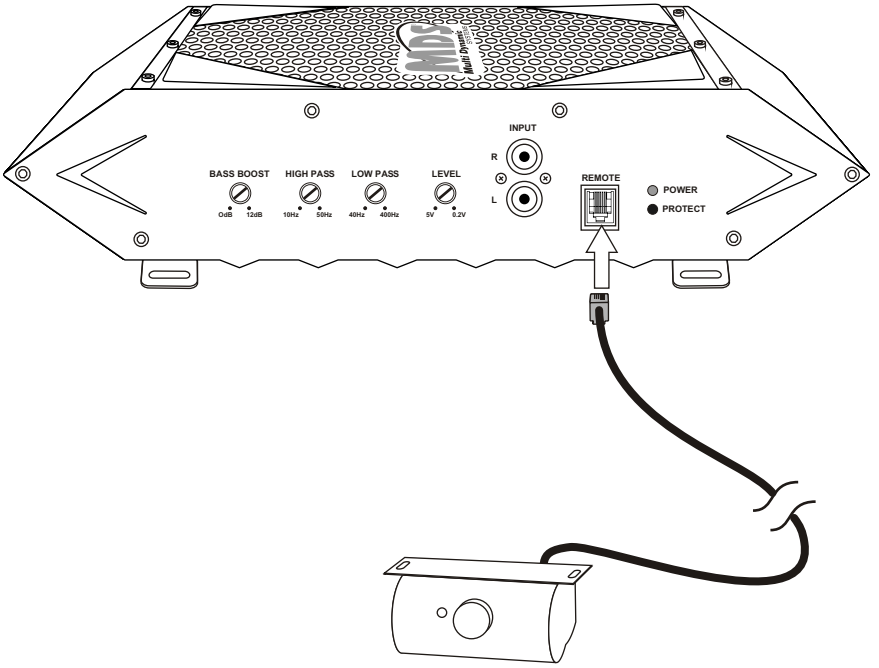



TWO 4 OHM SPEAKERS IN PARALLEL (2 Ohm)

# *REMOTE BASS CONTROL MODULE*

Before connecting the remote, it will be necessary to find a mounting location that will be easy to access for adjustment. Once you select your mounting location, you will need to run the control wire from the remote to the amplifier. To avoid possibility of induced noise from the car's electrical system (i.e. popping noises or engine noise), run the cable from the remote to the amplifier away from the car's electrical wiring.

Please note: Once the remote is plugged in, it overrides the bass boost on the amplifier and becomes the primary bass adjustment.

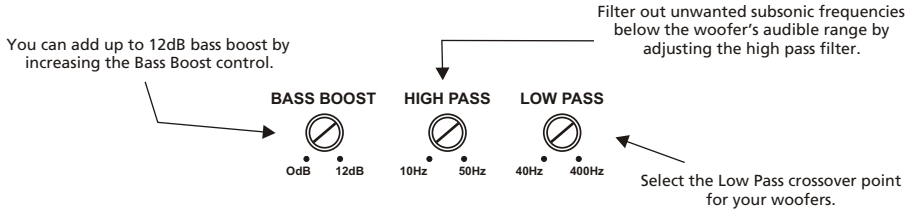


# ADJUSTING THE X-OVER AND BASS

The MDS amplifier features a built-in combination variable high and low pass crossover. The low pass filter works together with the (subsonic) high pass filter to achieve band pass filtering. This concentrates the amplifier's output power to your woofer's optimum frequency range for maximum performance.

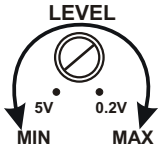
Before making adjustments, lower the (subsonic) "High Pass" control to 10Hz by rotating in the full counter clockwise position. Next select the desired Low Pass frequency. The crossover point should be determined by the speaker's recommended operating range. Once you have set the "Low Pass frequency, adjust the "High Pass" control clockwise while listening to the system until you hear the Bass output start getting thinner (lower) in sound then stop. This will filter out the subsonic frequencies below the speaker's normal operating range for improved output.

Fine tune the bass by adjusting the Bass Boost Control to deliver up to 12dB of boost at 45Hz.


You can add up to 12dB bass boost by increasing the Bass Boost control.
Filter out unwanted subsonic frequencies below the woofer's audible range by adjusting the high pass filter.
BASS BOOST
HIGH PASS
LOW PASS
OdB
12dB
10Hz
50Hz
40Hz
400Hz
Select the Low Pass crossover point for your woofers.

# FINE TUNE THE SYSTEM

***Fine tune the amplifier's input sensitivity.***




The gain sensitivity control for the MDS amplifier is located on the side panel. This gain control has been included to allow adjustment to properly match the output of the radio. This is one of the most misunderstood adjustments. By rotating the control in the clockwise direction, the amplifier's input will become more sensitive and the music will play louder. This is not a volume control and you will not get more power out of the amplifier in the maximum position! It may seem to deliver more output, but actually the system is only playing louder faster as you turn the volume control on the radio. Ideally, to properly level match the system the goal is to achieve maximum output from the amplifier without distortion at about 3/4 of the volume control.

To determine if the amplifier's gain is set properly, turn the system on and slowly increase the volume control. You should be able to use about 3/4 volume before the system gets loud but not distorting. It is very important when making these adjustments that you do not over drive the speakers (at point of distortion) this will cause permanent damage to the speakers. If you are unable to achieve 3/4 volume before distortion you will need to adjust gain control (in this case you would reduce the gain). The gain controls should be adjusted very slowly. It may help to have another person to assist you by adjusting the gain controls while you listen for distortion.

# TROUBLE SHOOTING THE SYSTEM

We have put together this trouble-shooting guide if you experience problems after installing the amplifier. Please keep in mind that the majority of problems incurred are caused by improper installation and not the equipment itself. In addition, there are many components in the system that could cause various signal problems such as inducted electrical noise and engine noise.

Before you can properly address the problem, you must first find the component that is causing the problem. This will take patience and a process of elimination.

| LOOK FOR.... | SOLUTION |
|---|---|
| **No Output** | |
| Blown fuse | Replace |
| Bad RCA Cable(s) | Replace |
| +12V at power terminal | Check connection |
| +12V at remote terminal | Check connection |
| Grounding point clean and tight | Check for ground w/meter |
| Head Unit's fader not in center position | Set to center position |
| **Low Output** | |
| Check level adjustments | Re-adjust |
| Bad RCA cable(s) | Replace |
| Improper level matching | Re-adjust |
| **Engine Noise** | |
| Grounding points are clean and tight | Check for ground w/meter |
| Ground all components at same point | Ground at same point |
| Try different grounding point | Change for better ground |
| Bad RCA cable(s) | Replace |
| Use High Quality shielded RCA cables | Rejects inducted noise |
| Low Vehicle charging system and/or battery | Fix and/or replace |
| **Protection L.E.D. Illuminated** | |
| Speaker short | Check speakers connection for short circuit |
| Speaker grounding out | Make sure speaker wires do not touch chassis ground |
| Impedance too low | Check speaker impedance (Min 2 ohm ) |
| Overheating | Check mounting location for Adequate air Circulation<br>Speaker impedance too low |

# *SPECIFICATIONS*

***MDS GP800***

Output Power @ 14.4 VDC :
- 4 ohm .....400W
- 2 ohm .....800W

Frequency Response .....10Hz-400Hz
S/N Ratio (A-weight.....>85dB
THD with 20k filter ..... .50%
Low Input Level.....200mV-5V
Battery Voltage Range .....10.5VDC-15.5VDC
Crossover High Pass .....10Hz-50Hz
Crossover Low Pass.....40Hz-400Hz
Crossover Slope .....12dB/Oct
Bass EQ .....0-12dB @ 45Hz
Remote Bass control.....Yes
Fuse.....4 x 20A

Due to continuing product improvement, specifications subject to change without notice.

**MDS - Multi Dynamic Systems of Sweden AB**
**Midsommarv. 8-10**
**126 35 Hägersten**
**+46(08)556 00 740**
**www.mds.se**

Manual by EXTREME CONCEPTS
www.extremeconcepts.com
MDS GP800 REV 4.20.06